

INFLUENCE OF WATER QUALITY FORECASTING DUE TO REAL-TIME MONITORING DATA HANDLING

IN-SUNG YEON¹, SANG-JIN AHN², GYU-BANG YEON³ and UNG-YONG KIM¹

¹Lecturer, Department of Civil Engineering, Chungbuk National University, #48, Gaesin-Dong, Heungduk-Ku, Cheongju, Chungbuk, 361-763, Korea
(Tel: +82-43-261-2226, e-mail: isyeon@chungbuk.ac.kr)

²Professor, Department of Civil Engineering, Chungbuk National University, #48, Gaesin-Dong, Heungduk-Ku, Cheongju, Chungbuk, 361-763, Korea
(Tel: +82-43-261-2380, Fax: +82-43-267-2199, e-mail: hydrosys@chungbuk.ac.kr)

³Professor, Department of Civil Engineering, Chungcheong University, #330, Wolgok-Ri, Kangnae-Myun, Cheongwon-Kun, Chungbuk, 363-792, Korea
(Tel: +82-43-230-2313, Fax: +82-43-230-2318, e-mail: gbyeon@ok.ac.kr)

Due to the water pollution accident occurred at Nakdong river in 1994, real time water quality monitoring systems are established at four large river basins in Korea.

It is necessary to choose a suitable model for the real time water quality forecasting and management. Construction of Neural network model is easy and adapted to change surroundings well by training. Neural network model is used to research the water quality and runoff forecasting at river and lakes(Maier and Dandy, 1996 ; Zhang and Govindaraju, 1998)

Modular neural network shows better results when using time factor, which is qualitative data trained with quantitative data. When using a modular network, a given task is split up among several local expert NNs. The average load on each NN(Neural Network) is reduced in comparison with a single NN that must learn the entire original task, and thus the combined model may be able to surpass the limitation of a single NN.

Fig. 1 shows the water quality forecasting process. The median was extracted from the raw data every 5 minutes. In the first round, the median value has been smoothed, and in the second round it is smoothed again. The model is trained in the case of the median, first round, and second round, and then is applied to forecast water quality on verification event. Using the smoothing was better than using the median generated by raw data, and the best result was acquired by using the 2nd smoothing. We constructed a water quality forecasting model using the neural network model, and the results according to smoothing of the input data were analyzed. Using the smoothing was better than using the median generated by raw data, and the best result was acquired by using the 2nd smoothing. Fig. 2 displays the TOC forecasting result, and this result approximates to the real measurement value with smoothing, as the analysis result. In the case of DO, there were no major differences shown in the 3 cases. We were easily able to perform the forecasting process through the water quality forecasting system implemented by GUI.

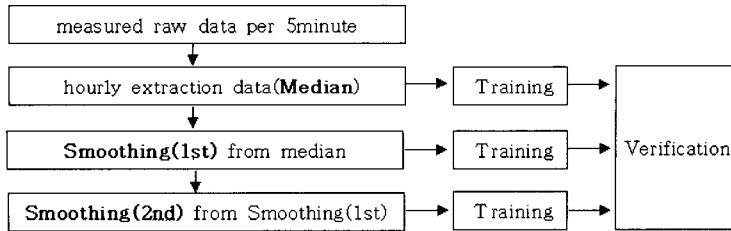


Fig. 1 Water quality forecasting process

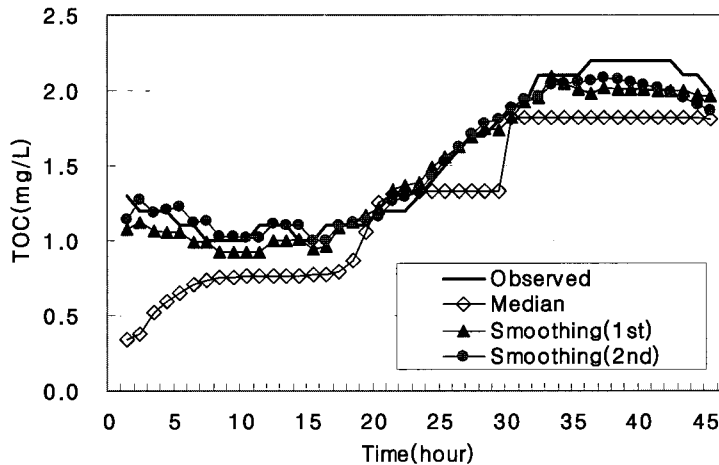


Fig. 2 TOC forecasting result

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